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(71)Applicant : DAINIPPON INK & CHEM INC

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(72)Inventor : SHIMIZU SHINJI  
WATANABE YASUYUKI  
KOJIMA YASUHIKO  
OE KOJI  
TASHIRO NAMUYUKI

## (54) NEGATIVE LITHOGRAPHIC PRINTING PLATE ORIGINAL PLATE AND MANUFACTURE OF PRINTING PRESS PLATE

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a negative lithographic printing plate original plate for directly writing digital image information from a computer by using a high energy and a method for manufacturing a printing press plate using it.

**SOLUTION:** The negative lithographic printing plate original plate of a first aspect comprises a thermosensitive composition containing a substance for absorbing a light to heat, anion self-water dispersible resin particles having a mean particle size of 0.005 to 15 micrometer and a fluorosurfactant and coating a support having a hydrophilic surface. The method for manufacturing a printing press plate using the original plate comprises the steps of image-like exposing according to a high energy light based on digital image information from a computer, developing the image information with an alkali aqueous solution, and posttreating the developed image.

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**CLAIMS**


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## [Claim(s)]

[Claim 1] The negative-mold lithography version original edition characterized by having a sensible-heat nature constituent layer containing the anion type self-water-dispersion resin particle whose mean particle diameter the matter which absorbs light and generates heat on a base material with a hydrophilic front face, and the acid number are 10-300, and is 0.005-15 micrometers, and a fluorine system surfactant.

[Claim 2] The negative-mold lithography version original edition according to claim 1 whose matter which absorbs a light according to claim 1 and generates heat is the pigment by which graft polymerization was carried out.

[Claim 3] The negative-mold lithography version original edition according to claim 1 or 2 whose pigment according to claim 2 by which graft polymerization was carried out is carbon black by which graft polymerization was carried out.

[Claim 4] The negative-mold lithography version original edition according to claim 1 whose matter which absorbs a light according to claim 1 and generates heat is a color.

[Claim 5] The negative-mold lithography version original edition according to claim 1 to 4 whose anion type self-water-dispersion resin particle is a minute particle manufactured from the first process which dissolves or distributes an anion type self-water-dispersion resin in the organic solvent, and the second process which makes a minute particle generate in a water medium by carrying out the phase inversion emulsification of the aforementioned dissolution or the distributed constituent.

[Claim 6] The negative-mold lithography version original edition according to claim 1 to 4 whose anion type self-water-dispersion resin particle is a minute particle manufactured through the second process which makes a minute particle generate in a water medium, and the third process which removes the organic solvent and superfluous water the first process which dissolves or distributes an anion type self-water-dispersion resin in the organic solvent, and by carrying out the phase inversion emulsification of the aforementioned dissolution or the distributed constituent.

[Claim 7] The negative-mold lithography version original edition according to claim 6 which is what is characterized by providing the following. The first process which an anion type self-water-dispersion resin particle makes dissolve or distribute an anion type self-water-dispersion resin in the organic solvent. The second process which makes a minute particle generate in a water medium by carrying out the phase inversion emulsification of the aforementioned dissolution or the distributed constituent. The process which is manufactured through the third process which removes the organic solvent and superfluous water, and this second process makes reverse-neutralize the acid radical neutralized after this phase inversion emulsification.

[Claim 8] The negative-mold lithography version original edition according to claim 1 to 7 which has at least one sort of acid radicals chosen from the group which an anion type self-water-dispersion resin becomes from a carboxyl group, a phosphate group, a sulfonic group, and a sulfuric-acid machine and which is the copolymer which reaches or is obtained, using acid-radical content polymerization nature oligomer as an indispensable component acid-radical content polymerization nature monomers.

[Claim 9] The lithography lithographic plate production method which is the method of producing the lithography lithographic plate using the negative-mold lithography version original edition according to claim 1 to 8, and is characterized by having each process of the picture Mr. exposure process by \*\* high-density energy light, the process which removes the non-picture section of \*\* sensible-heat nature constituent layer with a wet method, and forms a printing lithographic plate picture, \*\* rinsing, gum length, and a dryness process.

[Claim 10] The lithography lithographic plate production method according to claim 9 which includes burning processing of a printing lithographic plate in said "\*\*\* rinsing, gum length, and dryness process."

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**DETAILED DESCRIPTION**

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the negative-mold lithography version original edition used as the so-called computer two-plate (CPT) version which can carry out write-in platemaking directly from the digital signal especially according to a computer etc. about the lithography version which is an offset-printing field and is used

[0002]

[Description of the Prior Art] As the system conventionally engraved directly from the digital signal of a computer \*\* What is depended on the xerography which used light laser, the thing to depend on the exposure and after treatment by \*\* light laser, \*\* What is depended on the exposure and after treatment by the high power laser of near-infrared shell infrared rays, \*\* The thing using the diffusion transfer of silver salt, the thing to depend on destroying a silicone rubber layer by \*\* electric discharge or high power laser light, \*\* A mask layer is prepared on the lithography version (PS plate) with the photosensitive image formation layer from the former, image formation is carried out to a mask layer, and what obtains the printing version through after treatment is known. It is a plate according to the technology of \*\* especially in the inside of it although the present condition is that there are merits and demerits at present, respectively, and the further examination is continued also in which [ these ] method. That the handling by the Ming room is possible, and by skipping the process accompanying the picture imprint from the film from the former In order that high power laser may go into a hand comparatively easily by remarkable development of faults, such as dotage and adhesion of dust, being lost and the laser light system in recent years, It is observed as a realistic plate from the ability to respond [ that the picture of that sufficient speed is obtained on the occasion of exposure practical or high resolution is acquired, ] also to a large version.

[0003] As the printing plate which used the conventional high power laser of near-infrared shell infrared rays as the light source if it classifies from a viewpoint of the development system as a back process, although the plate based on the hot printing technology indicated by JP,7-214744,A, 7-281423, 9-156069, etc. is proposed, the repeatability accompanying the picture imprint with the bad printing durability which is not necessarily enough is inadequate -- etc. -- it was not the system can be satisfied [ with the repeatability or printing adaptability of a picture ] of a system Moreover, they are JP,7-244373,A and 8-048020 as another technology. Although the method of obtaining a printing plate by the negatives after [ picture exposure ] exfoliation developing-method by 8-267701, 8-292556, 9-029925, 9-109352, and 9-123383 M etc. was indicated, wetting of the hydrophilic portion which exfoliation development is not necessarily completely performed but a defect produces in a picture is not enough, and it was not the system landing is satisfied [ with the repeatability or the printing adaptability of a picture ] of a system like [ that \*\*\*\*\* occurs etc. ] hot-printing technology on the occasion of generating and printing of a greasing. Furthermore, although the system without the wet developing by JP,7-186562,A, 8-099477, 8-108660, 9-141819, 9-171249, 9-171250, 9-236926, 10-016423, 10-026834, 10-029292, the Japanese patent official report No. 2530448, etc. is indicated, and there is no problem in

the resolution of a picture, it can be satisfied again from the point of that the landing of \*\* is bad and water cannot be wrung, \*\*\*\*-proof running short of which Blanc dirt generates on the occasion of printing. There was no \*\*.

[0004] As mentioned above, at present, the present condition is that a certain practical problem has arisen on the occasion of printing in the system without a wet development system as after treatment after picture exposure. Then, although there is a plate which consisted of a resin which contained the diazonium machine by JP,7-306528,A and 9-179292 as the negative-mold lithography original edition by the development system wet [ without such a problem ], and carbon black, since it was existence of a diazonium machine, preservation stability was not bad practical. Moreover, the quinone diazide compound was used for JP,9-274317,A, and although the method of obtaining a printing plate by optical irradiation covering 2 times, the exposure and UV beam-of-light complete exposure by infrared-laser light, was indicated, there was a problem on which sensitivity performs exposure operation twice late. Furthermore, it is JP,7-020629,A as a system which development technology is concentrating most again. 7-271029, 8-234426, 9-185160, 9-197668, 9-197671, 9-202873, 9-208925, 9-221652, 9-221654, Although there is a printing plate using the acid generating matter by the heat by 9-176112, 9-183960, 9-183961, 9-222731, 9-239945, 9-244226, 9-244233, etc. In order to complete the cationic polymerization reaction accompanying acid generating which has a problem in acid generating conservation-of-matter stability, the front stirrup of exposure needed heat-treatment later, therefore had practical problems -- a problem arises in the repeatability of a half tone dot.

[0005]

[Problem(s) to be Solved by the Invention] The first technical problem of this invention is offering the negative-mold lithography version original edition which direct platemaking's is possible, can use the conventional processor in a development further, and can use the conventional printer as it is also in printing from digital signals, such as a computer, and which is the high-density energy light writing type computer two-plate version.

[0006] Even if the negative-mold lithography version original edition by which the second technical problem of this invention was produced according to the method of this invention does not need the special safety light but works under the usual indoor floodlight etc., it is offering the negative-mold lithography version original edition by which the workability which can produce an convenient good printing lithographic plate has been improved.

[0007] The third technical problem of this invention is offering the sensible-heat nature constituent with which high-density energy light's is efficiently absorbed, it changes into heat energy, and the latent image of high resolution sharp as a result is moreover acquired and which uses an anion type self-water-dispersion resin particle as an indispensable component.

[0008] Furthermore, the fourth technical problem of this invention is offering the printing lithographic plate production method which uses the lithography version original edition of the negative mold by this invention which solved the above-mentioned technical problem, and can produce the good high printing lithographic plate of resolution required for printing.

[0009]

[Means for Solving the Problem] The matter which the above-mentioned technical problem of this invention absorbs light on a base material with a hydrophilic front face, and generates heat, The acid number produces [ 10-300, and a mean particle diameter ] the negative-mold lithography version original edition which prepared the sensible-heat nature constituent layer which contains the anion type self-water-dispersion resin particle and fluorine system surfactant which are 0.005-15 micrometers as a main constituent. It was able to attain by therefore carrying out lithography lithographic plate production at "rinsing, the gum length, and the dryness process" which include burning processing if needed [ the process and if needed / \*\* ] which remove the non-picture section of the picture Mr. exposure by \*\* high-density energy light, and \*\* sensible-heat nature constituent layer with a wet method, and form a printing lithographic plate picture.

[0010] this invention as a mechanism of the write-in image formation by the high-density energy light to a sensible-heat nature constituent layer It differs from the mechanism using the photochemical reaction

like reforming (positive-type PS plate) accompanying the polymerization reaction (negative-mold PS plate) by the light energy and monomer in the so-called PS plate etc., or the partial decomposition reaction of the polymer by the light energy. The resin particle of the picture section does melting and weld of mutually with the heat generated by absorption of a light energy, and a picture is formed. It is what was performed by having found out the new method which carries out dissolution removal of the non-picture section of native with the wet method which used the after-treatment liquid, and is referred to as acquiring the picture of a printing lithographic plate. The image formation process by this invention is based on the mechanism using a physicochemical change of the matter, and it can be said that a Prior art is a method based on a completely different principle.

[0011] That is, the first composition of this invention is the negative-mold lithography version original edition characterized by having a sensible-heat nature constituent layer containing the anion type self-water-dispersion resin particle whose mean particle diameter the matter which absorbs light and generates heat on a base material with a hydrophilic front face, and the acid number are 10-300, and is 0.005-15 micrometers, and a fluorine system surfactant.

[0012] Moreover, this invention contains the negative-mold lithography version original edition whose matter which absorbs said light and generates heat is the pigment by which graft polymerization was carried out, the carbon black by which graft polymerization was carried out, or a color.

[0013] Moreover, this invention contains the negative-mold lithography version original edition said anion type self-water-dispersion resin particle of whose is a minute particle manufactured from the first process which dissolves or distributes an anion type self-water-dispersion resin in the organic solvent, and the second process which makes a minute particle generate in a water medium by carrying out the phase inversion emulsification of the aforementioned dissolution or the distributed constituent.

[0014] Furthermore, this invention contains the negative-mold lithography version original edition said anion type self-water-dispersion resin particle of whose is a minute particle manufactured through the second process which makes a minute particle generate in a water medium, and the third process which removes the organic solvent and superfluous water the first process which dissolves or distributes an anion type self-water-dispersion resin in the organic solvent, and by carrying out the phase inversion emulsification of the aforementioned dissolution or the distributed constituent.

[0015] Furthermore, the first process which the anion type self-water-dispersion resin particle which described this invention above makes dissolve or distribute an anion type self-water-dispersion resin in the organic solvent, The second process which makes a minute particle generate in a water medium by carrying out the phase inversion emulsification of the aforementioned dissolution or the distributed constituent, It is manufactured through the third process which removes the organic solvent and superfluous water, and this second process contains the negative-mold lithography version original edition which is a thing including the process which reverse-neutralizes the acid radical neutralized after this phase inversion emulsification.

[0016] Furthermore, this invention contains the negative-mold lithography version original edition which has at least one sort of acid radicals chosen from the group which said anion type self-water-dispersion resin becomes from a carboxyl group, a phosphate group, a sulfonic group, and a sulfuric-acid machine and which is the copolymer which reaches or is obtained, using acid-radical content polymerization nature oligomer as an indispensable component acid-radical content polymerization nature monomers.

[0017] The second composition of this invention is the method of producing the lithography lithographic plate which used the negative-mold lithography version original edition, and is the lithography lithographic plate production method characterized by to have each process of rinsing and the gum length which include burning processing of a printing lithographic plate the picture Mr. exposure process by \*\* high-density energy light, the process which removes the non-picture section of \*\* sensible-heat nature constituent layer with a wet method, and forms a printing lithographic plate picture, and if needed [ \*\* ], and a dryness process."

[0018]

[Embodiments of the Invention] Although characterized by this invention painting a sensible-heat nature

constituent layer with very high sensitivity to high-density energy light on a base material with a hydrophilic front face, the sensible-heat nature constituent layer of this invention is explained in detail below.

[0019] In this invention, although it is indispensable to contain the matter which absorbs light and generates heat in a sensible-heat nature constituent layer, various pigments or colors can be used as such matter.

[0020] As a pigment used for this invention, the pigment indicated by a commercial pigment and a Color Index handbook, the "newest pigment handbook" (volume on Japanese pigment technical association, 1977 annual publications), the "newest pigment applied technology" (CMC publication, 1986 annual publications), "printing ink technology" (CMC publication, 1984 annual publications), etc. can be used. As a kind of pigment, black-pigment, yellow pigment, orange pigment, brown-pigments, red-pigments, purple pigment, blue-pigment, green pigment, fluorescent pigment, and other polymer joint coloring matter etc. is raised. Specifically, insoluble azo pigment, an azo lake pigment, a disazo condensation pigment, a chelate azo pigment, a phthalocyanine system pigment, an anthraquinone system pigment, a perylene and a peri non \*\* pigment, a thioindigo system pigment, a Quinacridone system pigment, a dioxazine system pigment, an isoindolinone system pigment, a KINOFUTARON system pigment, a blue-and-white porcelain lake pigment, an azine pigment, an oximido pigment, a nitro pigment, a natural pigment, a fluorescent pigment, an inorganic pigment, carbon black, etc. can be used. A near infrared ray or an infrared laser is absorbed also especially in these examples, heat is generated efficiently, and carbon black is preferably used as matter which was moreover economically excellent.

[0021] These pigments may be used, without carrying out surface treatment, and may perform and use well-known surface treatment, and can consider the direction which combines with a pigment front face the method of carrying out the surface coat of a resin or the wax, the method to which a surfactant is made to adhere, and the active substance (for example, a silane coupling agent, an epoxy compound, the poly isocyanate, etc.) as the well-known surface treatment method. These surface treatment methods are indicated by "the property of a metallic soap, application" (Saiwai Shobo Co., Ltd.), the "newest pigment applied technology" (CMC publication, 1986 annual publications), and "printing ink technology" (CMC publication, 1984 annual publications). Especially being preferably used for the sensible-heat nature constituent layer of this invention is graft-ized carbon black which improved the dispersibility to the inside of a distributed solvent according to graft polymerization.

[0022] The graft-ized carbon black used for this invention Under existence of carbon black, the polymerization of a vinyl monomer is performed using a polymerization initiator. The method of supplementing with the growth polymer chain generated within a system on a particle front face, the method of growing up a graft chain from the polymerization start machine which introduced to the carbon black front face, It can compound by the method by the reaction of the functional group on the front face of carbon black, and reactant polymer etc., and can use, and the good graft-ized carbon black of dispersibility with various functional groups, is marketed, and they can be used for this invention by the end of today. about these graft-ized carbon black, it is explained to "the 3rd edition of a carbon black handbook, 1995 (volume on carbon black association), 167 pages", "the property which is carbon black, the optimal combination and use technical (technical-information association) 1997, 111 etc. pages", etc. in detail, and all are used for them suitable for this invention

[0023] As an example of the graft-ized carbon black What performed the radical polymerization with various vinyl monomers after carrying out the graft of the unsaturated polyester to carbon black, The radical polymerization reactant of the CB-peroxide machine and the various vinyl monomers which are obtained by the reaction of carbon black and lauroyl peroxide, The radical polymerization reactant of the carbon black and the various vinyl monomers which introduced the azo machine, The reed RIUMU par chlorate and vinyl monomer which were introduced into the carbon black front face, A cation ring-opening-polymerization object with lactone, cyclic ether, an annular acetal, etc., The cation ring breakage isomerization polymerization reactant of the crawl methyl group and 2-oxazoline which were introduced into carbon black, The benzo RIUMU par chlorate and vinyl monomer which were introduced into carbon black, A cation graft polymerization object with lactone, cyclic ether, etc., the



potassium carboxylic-acid machine and the anion ring-opening-polymerization object of beta-propiolactone which were introduced into carbon black, The anion ring breakage alternating copolymerization object of the potassium carboxylic-acid machine, the epoxide, and the cyclic anhydride which were introduced into carbon black, The anion graft polymerization object of carbon black / butyl-lithium complex, and a methylmetaacrylate and acrylonitrile, The ring-opening-polymerization object of the amino group and alpha-amino acid-N-carboxylic-acid anhydride which were introduced into carbon black, The highly reactive functional group introduced on the surface of carbon black, for example, an isocyanato group, A graft polymerization object with an acyl azide machine, an acyl-chloride machine, an epoxy group, a chloro thoriadiny group, an activity ester machine, etc. a polypropylene glycol, a polyethylene glycol, a silicon diol, a silicon diamine, polyethyleneimine, etc. can be mentioned.

[0024] What contains an anionic machine in a graft polymerization object is mentioned as what the acid number mixes with the resin particle of 10-300, and may distribute suitably especially in these carbon black by which graft polymerization was carried out in coating liquid required in order to form a sensible-heat nature constituent layer. as such an anionic machine -- a phosphate group, a sulfone machine, and a sulfuric-acid machine -- a carboxyl group is especially mentioned suitably The example of the method of introducing a carboxyl group desirable as such an anionic machine into the graft resin of carbon black is described.

[0025] the vinyl system graft polymer which has a carboxyl group carries out the graft polymerization of the polymerization nature monomer constituent containing the polymerization nature monomer which has a carboxyl group -- or it can manufacture easily by carrying out the graft of the polymerization object obtained by copolymerizing the polymerization nature monomer constituent containing the polymerization nature monomer which has a carboxyl group beforehand to carbon black As a polymerization nature monomer which has a carboxyl group, itaconic-acid monoalkyl, such as maleic-acid monoalkyl, such as an acrylic acid, a methacrylic acid, a crotonic acid, a fumaric acid, an itaconic acid, a maleic acid, and maleic-acid monobutyl, and itaconic-acid monobutyl, is mentioned, for example.

[0026] In addition, a carboxyl group can be introduced by the method of adding acid anhydrous machine content compounds, such as a maleic anhydride, phthalic anhydride, and trimellitic anhydride, to the hydroxyl-group content vinyl system graft polymer obtained by carrying out the graft polymerization of the polymerization nature monomer which has the method of adding monoalcohol, such as butyl alcohol, to the acid anhydrous machine content graft polymer obtained by carrying out the graft polymerization of the polymerization nature monomer which has acid anhydrous machines, such as a maleic anhydride, and a hydroxyl group etc.

[0027] The polyester resin which has a carboxyl group chooses suitably the compound which has carboxyl groups, such as a monobasic acid, a dibasic acid, and polybasic acid of three or more organic functions, and the compound which has hydroxyl groups, such as a diol and a polyol, and in case it carries out dehydration condensation by well-known methods, such as scorification and a solvent method, and manufactures polyester resin, it should just react so that a carboxyl group may remain. A carboxyl group is an unreacted carboxyl group which mainly originates in a dibasic acid or polybasic acid etc. which constitutes polyester resin. By carrying out the graft of the obtained polyester resin to a carbon black reactivity machine, the carbon black by which the graft was carried out by the polyester resin which has a carboxyl group can be obtained.

[0028] in addition, the method of adding acid anhydrous machine content compounds, such as a maleic anhydride, phthalic anhydride, and trimellitic anhydride, to the line or branching polyester resin which has a hydroxyl group as a method of introducing a carboxyl group into polyester resin and the polyester resin which has a hydroxyl group -- desirable -- a line -- while introducing the cull BOKIRU machine which reacted tetrapod carboxylic-acid 2 anhydrides, such as pyromellitic dianhydride, to polyester resin, the method of carrying out chain extension etc. is employable

[0029] Furthermore, a carboxyl group can be introduced also by the method of carrying out the graft polymerization of the polymerization nature monomer which contains the polymerization nature

monomer which has the carboxyl group mentioned above in the carbon black graft-ized by polyester resin further.

[0030] The carbon black graft-ized by the polyurethane resin which has a carboxyl group can be easily manufactured by making the polyol component containing the compound which has simultaneously the carboxyl group and hydroxyl groups as a component which introduce a carboxyl group, such as dimethylol propionic acid, and the poly isocyanate component react.

[0031] As for the particle size of the pigment used for this invention, it is desirable that it is in the range of 0.01-15 micrometers, and it is still more desirable that it is in the range which is 0.05-5 micrometers.

[0032] The amount of the pigment used is 10 - 50 % of the weight still more preferably one to 70% of the weight to the total solid of a sensible-heat nature constituent layer. It is difficult to form a suitable melting latent image not to become sufficient heating value to fuse the resin which lives together even if it absorbs light and generates heat, when there are few additions than 1 % of the weight, but for there to be too many heating values generated when there are more additions than 70 % of the weight, and for phenomena, such as combustion and destruction, occur, and form a picture.

[0033] as a color used for this invention, the well-known thing indicated by a commercial color and commercial reference (for example, the volume the volume "color handbook" Society of Synthetic Organic Chemistry, Japan edit, Showa 45 annual publications, and for "color-material engineering handbook" Japan Society of Colour Material, \*\*\*\*\*, 1989, technology [ which is industrial use coloring matter ], and "commercial-scene" CMC \*\*, 1983, and for Chemical Society of Japan "edited by the chemistry handbook and the applied chemistry", the Maruzen \*\*\*\*\*, 1986) can be used Specifically, colors, such as azo dye, metal \*\*\*\* azo dye, pyrazolone azo dye, an anthraquinone dye, a phthalocyanine dye, a cull BONIUMU color, a quinonimine dye, a methine dye, cyanine dye, an indigo color, quinoline dye, a nitro \*\* color, a xanthene system color, a thia gin system color, an azine dye, and an oxazine color, are mentioned. Especially the thing that absorbs infrared light or near-infrared light is desirable in these colors. As a color which absorbs infrared light or near-infrared light For example, JP,58-125246,A, 59-84356, 59-202829, Cyanine dye, JP,58-173696,A which are indicated by 60-78787 etc., The methine dye indicated by 58-181690, 58-194595, etc., JP,58-112793,A, 58-224793, 59-48187, The naphthoquinone color indicated by 59-73996, 60-52940, 60-63744, etc., The SUKUWARIRIUMU coloring matter indicated by JP,58-112792,A etc., cyanine dye given in British JP,434875,B, a near-infrared absorbent given in U.S. Pat. No. 5156938, etc. can be mentioned. Furthermore, the ARIRUBENZO (thio) pyrylium salt by which the U.S. Pat. No. 3881924 publication was replaced, TORIME tin thia pyrylium salt given in JP,57-142645,A, JP,58-181051,A, 58-220143, 59-41363, 59-84248, The pyrylium system compound indicated by 59-84249, 59-146063, 59-146061, etc., A cyanine dye given in JP,59-216146,A, pentamethine thio pyrylium salt given in U.S. Pat. No. 4283475, The near-infrared absorption color of a publication etc. can be mentioned to the pyrylium compound and U.S. Pat. No. 4756993 which are indicated by JP,5-13514,B and the 5-19702 official report.

[0034] subsequently, the acid number as an indispensable material which constitutes the sensible-heat nature constituent layer of this invention -- 10-300 -- and a mean particle diameter is 0.005-15 micrometers -- anion type self-water-dispersion resin particle \*\*\*\*\* explanation is given

[0035] As a role of the resin material in the sensible-heat nature constituent layer of this invention, the pigment which received irradiation of high-density energy light first transforms a light energy into heat energy, a resin particle carries out melting and weld thermally with the generated heat, it denaturalizes, and solubility falls remarkably. At this time, the resin particle itself is that what is necessary is not to change a property a lot by thermal denaturation, to wrap in the pigment or color currently distributed by thermal denaturation, and just to perform thermal denaturation as a sensible-heat nature constituent layer. In order to make this thermal denaturation perform efficiently, the average grain size of a resin particle needs to be 0.005-15 micrometers. That is, when grain size is larger than 15 micrometers, the resin particle which received the generated heat is not enough to carry out melting and weld, and when grain size is smaller than 0.005 micrometers, it is not substantially economical in utilization. Moreover, the lithography version original edition of this invention also has another problem said that resolution [ in / an image processing / in it being used for the purpose of performing an image processing, and

using a resin particle with a not much large grain size, i.e., a larger particle than 15 micrometers, ] will fall. Moreover, it goes up [ , so that particle size distribution are narrow / the heat weld reaction distribution based on a heat-receiving operation is sharp, and / the resolution of the thermal imagery formed so much ] about the particle size distribution of a resin particle, and is desirable.

[0036] On the other hand, in order for the non-picture section of a sensible-heat nature constituent layer to be removed by the alkaline solution used into a development and to make the non-picture section in this development remove efficiently, a resin particle needs to have a meltable anionic machine in alkali solution. As such an anionic machine, although there are a carboxyl group, a phosphate group, a sulfonic group, a sulfuric-acid machine, etc., a carboxyl group is especially used suitably. The acid numbers of the resin particle which the amount of required carboxyl groups in a resin particle can be expressed with the acid number expressed with KOHmg quantity required to neutralize 1g of resins, and is used for this invention need to be 10-300. When the acid number is less than 10, the dissolution development by the developer is not enough, and when the acid number exceeds 300, or viscosity becomes high on the occasion of coating, un-arranging -- on the occasion of preservation of the negative lithography version original edition, preservation stability becomes bad -- arises.

[0037] Therefore, as a property for which the resin particle of a sensible-heat nature constituent layer is asked, it often distributes uniformly with a pigment or a color component in an application solution, and after dryness forms a stable paint film, can demonstrate the operation like the above in thermal denaturation, and can mention the narrow thing of particle size distribution as a resin particle with such a property by the resin particle whose mean particle diameter the acid numbers are 10-300, and is 0.005-15 micrometers.

[0038] Although the application solution of a sensible-heat nature constituent layer is applied on a base material with a hydrophilic front face and is furthermore dried in a dryness process in the manufacturing process of the negative-mold lithography version original edition in this invention after that, it is desirable to dry practical efficiently in this dryness process, and for a resin particle not to start thermal denaturation, such as dissolution, moreover, and it is desirable that for that the glass transition temperature of the resin particle of this invention is 50 degrees C or more. Drying efficiency is not bad practical although it is also possible to dry without being accompanied by the thermal denaturation of a resin particle at the temperature of less than 50 degrees C in such a case.

[0039] Next, the method for obtaining the resin particle used for the sensible-heat nature constituent layer of this invention is described. As a method of manufacturing a minute resin particle, although the grinding method, the suspension-polymerization method, the emulsion-polymerization method, and the phase inversion emulsifying method are learned conventionally It is difficult for the method by the grinding method to take a crushing energy great for manufacturing a minute resin particle, or to obtain a particle 1 micrometer or less with a sufficient precision in practice, Since the particle obtained is an indeterminate form, as the manufacture method of the minute resin particle used for the sensible-heat nature constituent layer of this invention -- un-arranging arises in mixture and distribution -- it is unsuitable. Moreover, by the method by the suspension-polymerization method, it being difficult to obtain a minute resin particle 1 micrometer or less in practice too and the suspension stabilizer used for the suspension polymerization remain on a particle front face, removal is difficult, and when it adds in a sensible-heat nature constituent layer, it is unsuitable from the reasons of having a bad influence on a sensible-heat property. Moreover, although according to the emulsion-polymerization method it can adopt as the minute resin particle production method of this invention if it restricts to grain size, it is difficult to remove the emulsion stabilizer which exists in the generated resin particle front face, and when it adds in a sensible-heat nature constituent layer, it is not desirable at the reasons of having a bad influence on a sensible-heat property, HAJIKI arising at the time of an application.

[0040] In case the minute resin particle which consists of the liquid and/or solid matter of water-insoluble nature is manufactured as the phase inversion emulsifying method is described by JP,3-221137,A and JP,5-66600,A on the other hand, under an operation of a hyphydrogamy object, a mean particle diameter is the method of making a minute resin particle form in a level several micrometers or less using the so-called self-water-dispersion resins which have the dispersion power which carries out

self-distribution, and is the method of performing emulsification and phase inversion simultaneously substantially. A minute resin particle is obtained without according to this phase inversion emulsifying method, not needing a special distributed stabilizer and needing a special device, and it also has the feature referred to as being able to manufacture the minute resin particle which makes the difficult polyester resin of manufacture a principal component by the suspension-polymerization method or the emulsion-polymerization method, and is the method which was most excellent as a method of manufacturing the minute resin particle used for the sensible-heat nature constituent layer by this invention.

[0041] Namely, the acid number for which this invention is used suitable for a sensible-heat nature constituent layer first is [ 10-300, and a mean particle diameter ] what offers the anion type self-water-dispersion resin particle which is 0.005-15 micrometers. The first process which this particle makes dissolve or distribute an anion type self-water-dispersion resin in an organic solvent, The manufacture method manufactured through the second process which makes a minute particle generate, and the third process which removes the organic solvent and superfluous water if needed in the water medium is also doubled and offered by carrying out the phase inversion emulsification of the constituent distributed [ which were distributed and was above-dissolved ].

[0042] The acid radical used as the hydrophilic group in the anion type self-water-dispersion resin of this invention is introduced into the resin through the chemical bond, serves as an anion in a water medium by this acid radical being neutralized by an organic base or the inorganic base, and presents a hydrophilic property. Specifically as such an acid radical, a carboxyl group, a phosphate group, a sulfonic group, or a sulfuric-acid machine can be mentioned. After adding a base to the organic continuous phase (O phase) which dissolved the resin which has such an acid radical in the organic solvent and neutralizing, by throwing in a hyphidrogamy object (W phase), it carries out and discontinuous-phase-izes, and a resin serves as a particle minute in a water medium, and distributed stabilization of the phase conversion (the so-called phase inversion emulsification) of a resin to O/W from W/O is carried out. The resin which has such a property is an anion type self-water-dispersion resin of this invention.

[0043] Therefore, in this invention, an anion type self-water-dispersion resin serves as a minute resin particle which constitutes a sensible-heat nature constituent layer. What is made to copolymerize the polymerization nature monomers which have an acid radical, and polymerization nature monomers other than these acid-radical content polymerization nature monomers under existence of a polymerization initiator as the resin concerned used for this invention, and is obtained can be mentioned. As an example of such acid-radical content polymerization nature monomers, an acrylic acid, a methacrylic acid, a crotonic acid, an itaconic acid, a maleic acid, a fumaric acid, itaconic-acid monobutyl, maleic-acid monobutyl, acid phosphoxyethyl metacrylate, acid phosphooxy propyl methacrylate, a 3-chloro-2-acrylamide-isobutane sulfonic acid, or 2-sulfoethyl methacrylate can be mentioned, for example.

[0044] As polymerization nature monomers other than acid-radical content polymerization nature monomers For example, styrene system monomers (aromatic vinyl monomer), such as styrene, vinyltoluene, 2-methyl styrene, t-butyl styrene, or chloro styrene : A methyl acrylate, An ethyl acrylate, an acrylic-acid isopropyl, acrylic-acid n-butyl, Isobutyl acrylate, an acrylic-acid n-amyl, an acrylic-acid isoamyl, An acrylic-acid n-hexyl, acrylic-acid 2-ethylhexyl, an acrylic-acid n-octyl, Various acrylic esters, such as an acrylic-acid desyl or an acrylic-acid dodecyl : A methacrylic-acid methyl, Methacrylic-acid ethyl, a methacrylic-acid isopropyl, methacrylic-acid n-butyl, A methacrylic-acid isobutyl, a methacrylic-acid n-amyl, a methacrylic-acid isoamyl, A methacrylic-acid n-hexyl, methacrylic-acid 2-ethylhexyl, A methacrylic-acid n-octyl, A methacrylic-acid desyl or various methacrylic-acid ester:, such as a methacrylic-acid dodecyl, -- various hydroxyl content monomer:, such as acrylic-acid hydroxyethyl or methacrylic-acid hydroxypropyl, -- N-methylol (meta) acrylamide -- or N-butoxy (Meta) Various N-substitution (meta) acrylic monomers, such as an acrylamide, can be mentioned.

[0045] The copolymer drawn with the combination of the above monomer may be a copolymer with polymerization nature monomers and polymerization nature unsaturation machine content oligomer

depending on the case. You may use what has an acid radical into the polymerization nature unsaturation machine content oligomer which furthermore starts. As such polymerization nature unsaturation machine content oligomer, vinyl denaturation polyester, vinyl denaturation urethane, or a vinyl denaturation epoxy compound can be mentioned, for example. As an example, a polymerization nature unsaturated bond (vinyl group) is introduced by the polycondensation of various compounds, such as a maleic anhydride, a fumaric acid, tetrahydro phthalic anhydride and a methylene tetrahydro maleic anhydride, alpha-terpinene maleic-anhydride addition product, monoallyl ether of triol, pen TAERI slit diaryl ether, or allyl glycidyl ether, or addition.

[0046] Furthermore, in order to make an acid radical introduce into polyester, what what has a carboxyl group at the end by it is obtained that what is necessary is just because the dibasic acid like a phthalic acid is used superfluously, or has an acid radical in a principal chain by use of trimellitic anhydride is obtained.

[0047] Moreover, as the above-mentioned vinyl denaturation urethane, it is obtained according to the addition polymerization of the various kinds of polyols and diisocyanate including glycerol monoallyl ether or 1, and 2-combination like a butadiene polyol etc., for example. Or vinyl combination is introduced into an end by the addition reaction of the urethane and the hydroxyl-group content polymerization nature monomers which have an isocyanate machine etc. Moreover, an acid component can be made to introduce into polyurethane also by adding dimethylol propionic acid etc. as a polyol component.

[0048] As monochrome methacrylate of a polyethylene glycol, the average molecular weight of a polyoxyethylene chain can mention the thing of 1,000-4,000 within the limits, for example.

[0049] Moreover, as a vinyl denaturation epoxy compound, the thing to which the carboxyl group of the end epoxy group of an epoxy resin, an acrylic acid, or a methacrylic acid was made to react can be mentioned, for example.

[0050] Furthermore, the oligomer of the polymerization nature monomers which have the polymerization nature vinyl group which made the glycidyl group content polymerization nature monomer add to a carboxyl group content vinyl copolymer is obtained. Although the polymerization nature monomers used here showed above, it is chosen from inside.

[0051] In addition, it is marketed as a macro monomer, for example, the oligomer of the end vinyl denaturation of the Toagosei chemical industry (\*\*) can also be used. Needless to say, if it is the oligomer which has a polymerization nature vinyl group, it will not be limited to the kind or method which were mentioned above.

[0052] It is usually carried out to the polymerization for obtaining these copolymers using a polymerization initiator under an aversion. Although the usual well-known thing can be used as a polymerization initiator, if a typical example is given, various azo compounds, such as various peroxide, such as a benzoyl peroxide, G t-butyl peroxide, a cumene hydroperoxide, t-butyl peroxide, or 2-ethylhexanoate, an azobisisobutyronitril, or azobisiso valeronitrile, can be mentioned, for example.

[0053] As a reaction solvent, the organic solvent of \*\*, such as various ether ester, such as various ester; butyl-cellosolve acetate, such as various ketones; ethyl acetate, such as various ether alcohols; acetones, such as various alcohols; cellosolves or carbitols, such as aromatic-hydrocarbon compound; methanols, such as toluene, a xylene, and benzene, ethanol, propanol, or a butanol, a methyl ethyl ketone, or a methyl isobutyl ketone, and butyl acetate, can be used, for example.

[0054] In the second process mentioned later, phase transition happens easily preferably, and use of the so-called low boiling point organic solvent of the acetone by which desolventization may be carried out easily, a methyl ethyl ketone, or ethyl acetate is appropriate in the third process.

[0055] Usually, although polymerization conditions were performed under nitrogen atmosphere within the 50 degrees C - 150 degrees C temperature requirement, of course, they were not restricted only to this. as the amount of the acid radical of the copolymer obtained -- as the acid number -- 10-300 -- desirable -- 15-200 -- 20-150 are still more preferably suitable

[0056] moreover, the required shell holding stiffness with the copolymer containing an acid radical sufficient as a minute resin particle and the thing which has the above molecular weight to some extent -



- desirable -- usually -- the number average molecular weight of the range of 3,000-100,000 -- it is the number average molecular weight of the range of 5,000-50,000 preferably. It has the influence of particle intensity not becoming it being weak and enough [ the physical intensity of a sensible-heat nature constituent layer ], the degree of thickening at the time of phase inversion emulsification when molecular weight is larger than 100,000 becoming large on the other hand, consequently control of particle size and the distribution of particle size becoming large etc., and what has molecular weight smaller than 3,000 is not desirable when it is any.

[0057] Moreover, in order to prevent the weld at the time of dryness, or the blocking under hot environments, as a glass transition temperature of the anion type self-water-dispersion resin by this invention, 50 degrees C or more are suitable.

[0058] Various kinds of epoxy compounds which are urethane resins, for example, the urethane-resin dispersion shown in JP,1-287183,B, as the anion type self-dispersibility resin concerned used by this invention other than the above resins, or are described by an epoxy resin, for example, JP,53-1228,A, 55-3481, or 55-9433 can be mentioned.

[0059] As the adjustment method of the anion type self-water-dispersion resin particle of this invention, it is making the organic solvent dissolve or distribute an above-mentioned anion type self-water-dispersion resin as the first process first. The usual agitator machine can be used as this method. It is also possible to accept the need, to heat and warm and to accelerate the dissolution or distribution.

[0060] The second process is the stage of performing phase inversion emulsification into a water medium, after neutralizing the anion type self-water-dispersion resin which the organic solvent was made to dissolve or distribute by the base. After being neutralized by the base, by adding the hyphydrogamy object, conversion of the resin phase from W/O to O/W is performed in an instant, and a resin particle generates the anion type self-water-dispersion resin dissolved or distributed by the organic solvent in a water medium. By the conventional polymerization method, it performed first as a process that the form where consist of two processes with formation-izing (polymerization reaction) of a resin particle succeedingly, and each became independent of formation-ization of a rough particle unit particle, i.e., the particle of a unit which may turn into a resin particle by polymerization reaction although the resin has not become, (many are liquefied) is still separate. On the other hand, in this invention, without distinguishing the above-mentioned process, it is using phase inversion emulsification of a self-water-dispersion resin, and the feature is referred to as completely going on being simultaneous and completely in an instant.

[0061] As a base used at the second process, ammonia, such as alkali-metal salts, such as a sodium hydroxide, a potassium hydroxide, and a lithium hydroxide, and those carbonates, and those acetate, etc. is mentioned as an inorganic basic compound. As an organic basic compound, alkanolamines, such as alkylamines, such as a monomethylamine, a dimethylamine, a trimethylamine, an ethylamine, a diethylamine, and a triethylamine, and a diethanolamine, can be used, for example. Although a basic compound may be used as it is, it usually uses as a form of solution.

[0062] Subsequently, in addition to formation of a minute resin particle, control of the particle size used as another important factor is included in the second process in this invention. It is controlled in the amount of the base which neutralizes the acid radical fundamentally contained in an anion type self-water-dispersion resin. In the method of this invention, the thing of the particle size from submicron (less than 1 micrometer) one to 30 micrometers can be suitably obtained arbitrarily by changing the amount of neutralization by the base (amount of the base which neutralization takes) within the limits of 10-100-mol% of an acid radical. The ease of control of this particle size also becomes one feature of this invention. And the minute resin particle which succeeds in a normal distribution is obtained substantially, without providing a special means in any way, if, as for particle-izing in a water medium, various kinds of solvents and solutes have applied the share of the grade mixed uniformly, since the self-water dispersion power of the resin called phase inversion emulsification is used.

[0063] The agitator of well-known common use can be used as a device which can be used for the phase inversion emulsification in the second process. Especially when controlling a particle diameter to below submicron one, use of an emulsification disperser etc. is more desirable. For example, generally it is

called a high-speed-shearing turbine type disperser, and a gay mixer (special opportunity-ized industrial company make), a dace spar (special opportunity-ized industrial company make), Ultraturrax (Germany), KEDIMIRU (United States), the Shache flow (United States), the Silverson mixer (Britain), a HARERU homogenizer (Germany), etc. are mentioned. Moreover, the continuation emulsification disperser by the stator which gears to the rotor which carries out high-speed rotation and it like a slasher (Mitsui Mining Co., Ltd. make) or KYABI TRON (product made from an incorporated company Euro tech), A Micro fluidizer (\*\*\*\*\* Industries make), a micro homogenizer (\*\*\*\*\* Industries make), The emulsification disperser by the interaction of the chamber of a special configuration like a MANTON gaulin homogenizer (gaulin company make) or a nano mizer (nano mizer incorporated company make), and supply ENARUGI of a pump, The continuation mixer in a stood [ still ] type pipe without a mechanical component like a static mixer (made in NORITAKE Company) is mentioned.

[0064] Here, if the share to phase inversion is too weak, the inclination for particle size distribution to spread will be seen. Moreover, if a share is too too strong, the generated particle will be destroyed, and an aggregate and a very detailed particle will arise, as a result a distribution will spread. However, what is necessary is to restrict in part and just to classify the particle by this invention such even case from the place which is what succeeds in a normal distribution and is obtained, though it classifies in order to arrange particle size distribution further. It returns to the first process and the minute resin particle classified in this way can be reused by remelting or re-distributing to the organic solvent.

[0065] Although the minute resin particle of this invention is usually used as it is as a water dispersing element, of course, it is also possible to consider as a powdered dry resin particle except for a hyphydrogamy object.

[0066] The third process obtains a powdered dry cleaning minute resin particle except for the organic solvent or a hyphydrogamy object. Since it is distributing in a water medium, first, after the minute resin particle obtained at the second process obtains the wet cake of a resin particle, it can be dried with a jet mill etc. by suction filtration, or can obtain a powdered minute resin particle by the method of well-known common use of a spray dryer etc.

[0067] Since the acid radical by which the acid radical was especially neutralized by the base is wearing the front face when obtaining the powdered minute resin particle by this invention, depending on the case, the inclination condensed and welded at a dryness process according to the interaction between particles is seen. An inorganic acid or an organic acid is made to reverse-neutralize, and such a problem is solved by returning to an acid, after completing minute resin particle-ization at the second process. namely, the acid by such reverse neutralization -- \*\*\*\*\* ---izing -- it is -- a hyphydrogamy -- make it lose the stability in the inside of the body -- it closes, and if easy in separation with a hyphydrogamy object, a bundle deer also makes the interaction between particles lose by it, and it is said that it protects weld in dryness In this case, as for the minute resin particle of a filtration process or the spray-drying method dried by the technology of well-known common use, condensation or weld are not accepted at all.

[0068] The resin particle by the phase inversion emulsifying method acquired as mentioned above is used at 20 - 90 % of the weight as a composition ratio of the resin particle in a sensible-heat nature constituent layer, and 30 - 70 % of the weight is used preferably. Changing [ of the physical characteristic by thermal denaturation ] becomes superfluous, when there are few composition ratios of a resin particle than 20 % of the weight, a problem will arise in the quality of the picture section, when a composition ratio exceeds 90 % of the weight, it is not enough and a problem produces the physical property change by thermal denaturation to the development nature in a development etc.

[0069] A fluorine system surfactant is added by the sensible-heat nature constituent layer of this invention. As an operation of a fluorine system surfactant, it faces applying sensible-heat nature constituent layer application liquid on the base material of a hydrophilic front face, and the operation as a leveling agent which raises application quality is mentioned in the first place. in the application liquid of an admiration thermal constituent layer, the second effect which adds a fluorine system surfactant neutralizes the cohesive force based on the operation between particles of the resin particle to contain, carbon black, etc., and can consider the operation which raises dispersibility

[0070] As an example of a fluorine system surfactant, a perfluoro alkyl group content carboxylate, A perfluoro alkyl group content sulfonate, a perfluoro alkyl group content sulfate salt, Anionic fluorine system surfactants, such as perfluoro alkyl group content phosphate, Cation nature fluorine system surfactants, such as a perfluoro alkyl group content amine salt and perfluoro alkyl group content quarternary ammonium salt, Amphoteric fluorine system surfactants, such as a perfluoro alkyl group content carboxy betaine and perfluoro alkyl group content aminocarboxylate, Nonion nature fluorine system surfactants, such as perfluoro alkyl group content oligomer, perfluoro alkyl group content polymer, and a perfluoro alkyl group content sulfonamide polyethylene-glycol addition product, etc. can be mentioned.

[0071] Even if it uses use of these fluorines system surfactant independently, it may use two or more sorts together. Moreover, the addition of the fluorine system surfactant to the inside of the sensible-heat nature constituent layer of this invention is 0.001 - 20 % of the weight to a sensible-heat nature constituent layer solid content, and is 0.01 - 10 % of the weight preferably. When fewer than 0.001 % of the weight, sufficient leveling effect is not acquired on the occasion of the application of sensible-heat nature constituent layer application liquid. Moreover, when it adds exceeding 20 % of the weight, the problem of a sensible-heat nature constituent layer exfoliating in a development will arise.

[0072] In order to prepare the sensible-heat nature constituent layer of this invention on a base material with a hydrophilic front face, it is producible by applying sensible-heat nature constituent layer application liquid on a base material with a hydrophilic front face, and drying. If an example is shown in production of sensible-heat nature constituent layer application liquid, it will be making the mixed solvent of water or water, and the organic solvent distribute a pigment or a color first. As a disperser, there are an ultrasonic disperser, a sand mill, attritor, a bar mill, a super mill, a ball mill, an impeller, DESUPAZA, KD mill, a colloid mill, a dynatron, 3 roll mills, a pressurized kneader, etc. Moreover, the organic solvent used at this time is an organic solvent of the low boiling point which may be dissolved in water and homogeneity, and, specifically, are a methanol, ethanol, an isopropanol, n-propanol, a butanol, a sec-butanol, t-butanol, an acetone, a methyl ethyl ketone, ethylene glycol, a propylene glycol, propylene triol, an acetic acid, a propionic acid, etc.

[0073] Moreover, in the case of graft-ized carbon black, the additive for attaining stabilization in a distributed solvent simultaneously with distribution is needed. As an additive, inorganic ion, such as alkaline metals, such as an organic primary amine of various low classes, a secondary amine, a tertiary amine, and the 4th class amine, and alkaline earth metal, etc. can mention various organic carboxylic acids, organic sulfonic acids, organic phosphoric acid, and amino carboxylic acids as an anion as a cation which constitutes the counter ion of a graft-ized agent. Moreover, various surfactants can be mentioned as another additive for stabilization. Although it is used as a surfactant by the surfactant which neither HAJIKI nor nonuniformity produces, choosing and cation nature surfactants, such as anionic surfactants [, such as various carboxylates, a sulfonate, a sulfate salt, and phosphate, ], fatty-amine salt and its quarternary-ammonium-salt, aromatic quarternary-ammonium-salt, and heterocycle quarternary ammonium salt, etc. are specifically mentioned, a fluorine system surfactant is used suitably.

[0074] Moreover, the minute resin particle of the anion type self-water-dispersion resin of this invention is in the state distributed in the water medium with the water-insoluble nature solvent, and when the amount of required resins is moreover contained, the hyphrogamy object containing the resin particle can be added and used for the adjustment liquid of the pigment adjusted previously as it was after the second process end of minute resin particle manufacture of the above-mentioned anion type self-water-dispersion resin.

[0075] It adds and uses for the adjustment liquid of the pigment or color adjusted previously, after carrying out forcible distribution and considering as a uniform solution into the organic solvent meltable in water and/or water on the other hand, when it obtains as a particle with a powdered resin particle. In order to carry out forcible distribution at this time, when the base is not fully neutralized, un-arranging, such as condensation between particles, arise in many cases. As a base which can be used at this time, inorganic ion, such as alkaline metals, such as an organic primary amine of various low classes, a



secondary amine, a tertiary amine, and the 4th class amine, and alkaline earth metal, etc. is used preferably.

[0076] Next, what is necessary is to dissolve in direct or water, and/or water at the meltable organic solvent, and just to add the fluorine system surfactant of the specified quantity into the mixed liquor of the pigment adjusted previously and a resin particle as it is.

[0077] In addition, various methods can be considered about the mixed addition sequence of the distributed adjustment liquid of a pigment or a color, resin particle distribution adjustment liquid, and a fluorine system surfactant solution, it does not necessarily need to be based only on the method described here, and which mixed method may be used.

[0078] Further the adjusted sensible-heat nature constituent layer application liquid Thus, the application assistant of the sake on an application disposition, For viscosity control, for example, various natural-water solubility macromolecules and a synthetic water soluble polymer, the water-soluble organic solvent (a methanol, ethanol, an isopropanol, and n-propanol --) A butanol, a sec-butanol, t-butanol, an acetone, a methyl ethyl ketone, A defoaming agent, various surfactants (a silicone system, fluorine system, etc.) (anionic, Nonion nature, cation nature), etc., such as ethylene glycol, a propylene glycol, propylene triol, an acetic acid, and a propionic acid, can be added.

[0079] The sensible-heat nature constituent layer application liquid produced as mentioned above is applied on a base material with a hydrophilic front face, after the formed element in an application solution is preferably adjusted to 1 - 50% of the weight. As the method of application, the rotation applying method, the wire bar applying method, the DIP applying method, the air knife applying method, the roll applying method, the blade applying method, the curtain applying method, the spray applying method, etc. can be mentioned.

[0080] The sensible-heat nature constituent layer application liquid applied on the base material which has a hydrophilic front face as mentioned above is dried for [ 10 seconds - ] 10 minutes at 30-150 degrees C using a hot air drying equipment, a ultrared ray dryer, etc. the coverage of the sensible-heat nature constituent layer after dryness -- 0.5 - 3.5 g/m<sup>2</sup> it is . A coverage is 0.5 g/m<sup>2</sup>. When few, the property as a printing lithographic plate is inadequate, and a coverage is 3.5 g/m<sup>2</sup>. When it exceeds, sufficient heating value to produce thermal denaturation on the occasion of the writing by high-density energy light is not obtained.

[0081] As a base material of the negative-mold sensible-heat nature image formation layer of this invention, the composite material which prepared the metal layer with technology, such as vacuum deposition or a lamination, is raised to the paper which applied the melting application or the synthetic-resin solution for plastic film; synthetic resin, such as metal plate; polyethylene terephthalates, such as aluminum, zinc, copper, stainless steel, and iron, a polycarbonate, a polyvinyl acetal, and polyethylene, or plastic film, for example. Especially aluminum and the compound base material by which aluminium coating was carried out are [ among these ] desirable.

[0082] As for the front face of an aluminum base material, it is desirable to carry out surface treatment in order to raise water retention and to raise adhesion with a photosensitive layer. For example, the split-face-ized method which methods and such combination, such as a brushing method, the ball polishing method, electrolytic etching, chemical etching, liquid honing, and a sand plastic strike, are mentioned as the split-face-ized method, and includes especially use of electrolytic etching is desirable.

[0083] The electrolytic solution which the water solution which contains the solution containing an acid, alkali, or those salts or the organic solvent as an electrolytic bath used in the case of electrolytic etching is used, and contains a hydrochloric acid, nitric acids, or those salts especially among these is desirable. Furthermore, the desmut treatment of the aluminum plate to which split-face-ized processing was performed is carried out in the solution of an acid or alkali if needed. In this way, as for the obtained aluminum plate, it is desirable to carry out anodizing, and its method of processing by the bath containing especially a sulfuric acid or phosphoric acid is desirable.

[0084] moreover, the need -- responding -- U.S. Pat. No. 2,714,066 -- said -- the silicate processing (a specific silicate --) indicated by No. 3,181,461 A potassium silicate, fluoridation zirconic-acid potassium processing given in U.S. Pat. No. 2,946,638, Phospho MORIBU date processing given in U.S. Pat. No.

3,201,247, alkyl titanate processing given in the British patent No. 1,108,559, Polyacrylic-acid processing given in the German country patent No. 1,091,433, the polyvinyl phosphonic acid processing indicated by the German country patent No. 1,134,093 and the British patent No. 1,230,447, The phosphonic acid processing indicated by JP,44-6409,B, phytic-acid processing given in U.S. Pat. No. 3,307,951, Processing by the salt of a hydrophilic organic high molecular compound given in JP,58-16893,A or JP,58-18291,A, and a divalent metal, What performed hydrophilicity-ized processing to JP,59-101651,A by the under coat of the water-soluble polymer which has the sulfonic group of a publication, Silicate electrodeposition what performed coloring by the acid dye of a publication to JP,60-64352,A, and given in U.S. Pat. No. 3,658,662 etc. can be processed.

[0085] Moreover, what performed sealing is desirable after graining processing and anodic oxidation. This sealing is performed in the immersing row to the hydrothermal solution containing hot water and mineral salt, or an organic salt by the steam bath etc.

[0086] Next, the negative-mold lithography version original edition of this invention is used, and how to produce a printing lithographic plate is explained.

[0087] The negative-mold lithography version original edition of this invention is the so-called computer two-plate (CPT) version by which picture writing is made based on the digital image information from a computer etc. on the direct version using high-density energy light. As the high-density energy light light source which can form a picture in the negative-mold lithography version original edition of this invention Oscillation wavelength The various semiconductor laser from 300nm to 950nm, a carbon dioxide laser (oscillation wavelength; 10.6nm), There are an YAG laser (oscillation wavelength; 532nm, 1064nm), an excimer laser (oscillation wavelength; 193nm, 308nm, 351nm) argon laser (oscillation wavelength; 488nm), etc. In any case, it chooses from the pigment which mentioned above the suitable pigment or suitable color which absorbs the specific wavelength of the light source and can be changed into heat, or a color, and can be used by adding in a sensible-heat nature constituent layer.

[0088] After a picture is written in the sensible-heat nature constituent layer of this invention by high-density energy light, the non-picture section is removed by the development with a wet method. Under the present circumstances, the developer used is the alkaline solution containing alkali chemicals.

[0089] namely, as an example of the alkali chemicals used for the developer of the negative-mold lithography version original edition of this invention A specific silicate, a potassium silicate, a potassium hydroxide, a sodium hydroxide, The sodium or the ammonium salt of the lithium hydroxide, the second, or third phosphoric acid, Inorganic alkali chemicals, such as a specific metasilicate, a sodium carbonate, and ammonia, Monochrome, II or a trimethylamine, monochrome, II, or a triethylamine, Organic amine compounds, such as monochrome or diisopropylamine, n butylamine, monochrome, II or a triethanolamine, monochrome, II or tri-isopropanolamine, ethyleneimine, and ethylene diimine, are mentioned.

[0090] The content of these alkali chemicals is 0.005 - 10 % of the weight, and is 0.05 - 5 % of the weight preferably. If fewer than 0.005 % of the weight, development will become poor, and if [ than 10 % of the weight ] more, a bad influence, such as invading a negative-mold sensible-heat nature image formation layer on the occasion of development, will be done.

[0091] To the developer of the negative-mold lithography version original edition of this invention, you may add the organic solvent. as the example For example, ethyl acetate, propyl acetate, butyl acetate, amyl acetate, benzyl acetate, Ethylene glycol monobutyl acetate, a butyl lactate, levulinic-acid butyl, An ethyl butyl ketone, a methyl isobutyl ketone, a cyclohexanone, An ethylene glycol monobutyl ether, an ethylene glycol benzyl ether, An ethylene glycol monophenyl ether, benzyl alcohol, a methylphenylcarbinol, n-amyl alcohol, a methyl amyl alcohol, a xylene, methylene dichloride, ethylene dichloride, monochrome chlorobenzene, etc. can be mentioned.

[0092] The content of these organic solvents is 20 or less % of the weight, and is 10 or less % of the weight preferably.

[0093] The need is accepted into the above-mentioned developer further again. A sulfurous-acid lithium, a sodium sulfite, Water-soluble sulfites, such as potassium sulfite and a magnesium sulfite, an alkali

fusibility pyrazolone compound, Hydroxy aromatic compounds, such as alkali fusibility thiol compounds and a methyl resorcinol, Water softeners, such as a polyphosphate and amino polycarboxylic acids, isopropyl naphthalene sulfonic-acid sodium, n-butyl naphthalene sulfonic-acid sodium, N-methyl-N-pentadecyl aminoacetic-acid sodium, Various surfactants, various defoaming agents, etc., such as anionic surface active agents, such as lauryl sulfate sodium salt, a Nonion nature surfactant, a cation nature surfactant, an amphoteric surface active agent, and a fluorine system surfactant, can be used.

[0094] Although the thing of the above-mentioned composition is used about composition of the developer used for this invention, the developer the object for negative-mold PS plates marketed practically or for positive-type PS plates can be used. What diluted the developer for negatives of the concentration type marketed 1 to 200 times is usable as a developer of the negative-mold lithography version original edition by this invention.

[0095] it is carried out, when the development conditions of the negative-mold lithography version original edition by this invention are immersed in a developer and rinse after that the negative-mold lithography version original edition to which the temperature of 15 degrees C - 40 degrees C and time appear for [ 1 second - ] 2 minutes, and are in, and picture writing ended them You may carry out grinding a front face lightly etc. if needed.

[0096] Processing according [ the negative-mold lithography version original edition of this invention which finished development ] to the desensitizer of rinsing and/or a drainage system is performed. as a desensitizer of a drainage system, gum arabic, a dextrin, a carboxymethyl cellulose, etc. are water-soluble, for example -- solution, such as water-soluble synthetic macromolecules, such as naturally-occurring-polymers; polyvinyl alcohol, a polyvinyl pyrrolidone, and a polyacrylic acid, is mentioned, and an acid, a surfactant, etc. are added to the desensitizer of these drainage systems if needed Then, it dries after desensitization and is used for printing as a printing lithographic plate.

[0097] It is desirable to carry out burning processing of the above-mentioned printing lithographic plate for the purpose of increasing the \*\*\*\*-proof of the obtained printing lithographic plate, and to consider as a printing lithographic plate. As a burning art, the printing lithographic plate first obtained by the art to the above is rinsed, and the after squeegee of a rinse or the gum liquid is removed and carried out. Subsequently, counter etching liquid is extended to a printing plate using proper quantity \*\*\*\* and exclusive sponge that there is no nonuniformity in the whole version. Sponge is extracted and excessive counter etching liquid is wiped off. The counter etching liquid on a version is dried within the dryer of a version. Burning is performed for 1 minute - 30 minutes under a 180-300-degree C temperature condition in burning oven. It can carry out by down stream processing referred to as considering as a printing lithographic plate after a version gets cold, and rinsing removing counter etching liquid, carrying out gum length and drying.

[0098] what is chiefly used as solution processed before performing burning processing so that a greasing may not generate the counter etching liquid used for this invention after burning processing -- it is -- as the main composition -- various surfactants -- 0.005 - 30 % of the weight has an anionic surfactant and/or a fluorine system surfactant added, and in pH, 2-11, and since that it is desirable keeps in the range of 3-10, various kinds of acids, alkali, or salts are added by especially preferably As an example desirable as an anionic surfactant, sulfate system activators, such as sulfonic-acid-group content activators, such as an alkylbenzene sulfonate, alkyl diphenyl-ether JISURU phon acid chloride, an alkyl naphthalene sulfonate, an aldehyde condensate of an alkyl naphthalene sulfonic acid, alpha olefin sulfonate, and alkyl sulfonate, a lauryl sulfate, a polyoxyethylene-alkyl-ether sulfate, and a polyoxyethylene-alkyl-phenyl-ether sulfate, etc. can be mentioned. As an example of a fluorine system surfactant, moreover, a perfluoro alkyl group content carboxylate, A perfluoro alkyl group content sulfonate, a perfluoro alkyl group content sulfate salt, Anionic fluorine system surfactants, such as perfluoro alkyl group content phosphate, Cation nature fluorine system surfactants, such as a perfluoro alkyl group content amine salt and perfluoro alkyl group content quarternary ammonium salt, Amphoteric fluorine system surfactants, such as a perfluoro alkyl group content carboxy betaine and perfluoro alkyl group content aminocarboxylate, Nonion nature fluorine system surfactants, such as perfluoro alkyl group content oligomer, perfluoro alkyl group content polymer, and a perfluoro alkyl

group content sulfonamide polyethylene-glycol addition product, etc. can be mentioned. Moreover, as an acid, a nitric acid, a sulfuric acid, a mineral acid like phosphoric acid, a citric acid, a succinic acid, oxalic acid, a tartaric acid, an acetic acid, a malic acid, a phytic acid, organic phosphonic acid, p-toluenesulfonic acid, a xylene sulfonic acid, etc. can be mentioned. Moreover, the potassium salt of these acids, lithium salt, sodium salt, an ammonium salt or the hydroxide of alkali metal, a carbonate, a hydrogencarbonate, etc. can be mentioned.

[0099] Furthermore, in the counter etching liquid of this invention, it is the denaturation object or synthetic-macromolecule polymer of a natural product or a natural product, and the high molecular compound which has film forming ability can also be added 0.0001 to 3% of the weight to a total weight. Moreover, antiseptics, a defoaming agent, a coloring agent, etc. can be added.

[0100] It is using the negative-mold lithography version original edition by this invention, first equipping with the negative-mold lithography version original edition by this invention the picture exposure machine which used high-density energy light, such as an YAG laser and infrared semiconductor laser, as the light source as a desirable method of producing a good printing lithographic plate, and performing picture writing for the digital information from a computer on the negative-mold lithography version original edition of a direct this invention. Under the present circumstances, it has the feature referred to as that the negative-mold lithography version original edition by this invention does not need the special safety light, but can usually do work under indoor light in the handling before and after exposure.

[0101] Subsequently, a development is performed using the developer which dilutes the positive type or the developer for negative-mold PS plates marketed, and is obtained, and the non-picture section is removed.

[0102] The development conditions at this time are usually the same as the development conditions of the negative mold currently generally performed in the commercial scene, or a positive-type PS plate, and good.

[0103] Then, it can dry, after processing with the desensitizer of rinsing and/or a drainage system, and a printing lithographic plate can be obtained.

[0104] In addition, although they do not interfere even if it carries out the one process of the above-mentioned development processes at a time, it is easy a routing to use the auto-processor which can be consistent and can do these work practical, and they are desirable. [ of a thing ]

[0105] Furthermore, since \*\*\*\*-proof is increased, as for the printing lithographic plate by this invention, it is desirable to perform burning processing and to present printing.

[0106]

[Example] Although an example explains this invention concretely in more detail below, this invention is not limited to these examples from the first.

[0107] (Synthetic example of an example of reference 1; acrylic polymer particle) 400g of a methyl ethyl ketone was taught to the 4 mouth flask of 1L equipped with stirring equipment, reflux equipment, a dryness nitrogen introduction pipe with a thermometer, and dropping equipment, and the temperature up was carried out to 80 degrees C. The solution which 80g of styrene, 238.9g of a methyl methacrylate, 24.5g of a methacrylic acid, 56.6g of a butyl acrylate, and 8g par butyl O "the tradename of the polymerization initiator by Nippon Oil & Fats Co., Ltd." are good, and was mixed was dropped over 2 hours. The acrylic polymer which the acid number 39.1 and number average molecular weight become [ a dryness solid-content ratio ] 20000 49.5% was obtained by adding 0.5g of par butyl O after 8-hour stirring, and agitating further for 8 hours. The dryness solid-content ratio was 120 degrees C, carried out weighing capacity of the sample after 1-hour dryness, and asked for it with the mass ratio while it carried out weighing capacity of the sample-solution about 1 section. Number average molecular weight was measured by GPC, and the molecular weight of polystyrene conversion had and described it. The acid number carried out weighing capacity of the sample solution of the specified quantity, and titrated and asked for it with the methanol solution of the potassium hydroxide of concentration known.

[0108] Water was dropped neutralizing and stirring 100g of solutions of the above-mentioned acrylic polymer by 2.71g of a triethylamine. It thickened gradually, viscosity fell remarkably from the

neighborhood which trickled about 150g water, and phase inversion completed the prepolymer solution. heating the obtained distributed liquid at 30 degrees C, and carrying out reduced pressure removal of the excessive water at an organic-solvent row, after adding 150 moreg water -- a dryness solid-content ratio -- the water dispersing element of the acrylic polymer particle of 0.12 micrometers of mean particle diameters was obtained 33.7% Particle size was measured by laser-doppler formula particle-size-distribution meter micro truck UPA-150.

[0109] (Synthetic example of an example of reference 2; polyester particle) 397.6g of a terephthalic acid, 397.6g of an isophthalic acid, 144.9g of ethylene glycol, and 243.6g of neopentyl glycol were taught to the 4 mouth flask of 2L equipped with stirring equipment, \*\*\*\*\*, the dryness nitrogen introduction pipe, and the thermometer, and the temperature up was carried out to it to 160 degrees C. It stirred for further 4 hours, having added 30g of a xylene and carrying out azeotropy removal of the water at 260 degrees C, while replacing \*\*\*\*\* with the decanter, after performing dehydration, adding 0.5g of dibutyl tin oxide and carrying out a temperature up over 6 hours to 260 degrees C. the last -- lowering the temperature -- 500g of a methyl ethyl ketone -- diluting -- the acid number 19.3 and a dryness solid-content ratio -- the polyester which has a carboxyl group in 65.5% of both ends was obtained The acid number carried out weighing capacity of the sample solution of the specified quantity, and titrated and asked for it with the methanol solution of the potassium hydroxide of concentration known. The dryness solid-content ratio was 120 degrees C, carried out weighing capacity of the sample after 1-hour dryness, and asked for it with the mass ratio while it carried out weighing capacity of about 1g of the sample solutions.

[0110] 30g of a methyl ethyl ketone was added to 100g of solutions of the above-mentioned polyester, and water was dropped, neutralizing and stirring by 2.36g of a triethylamine. It thickened gradually, viscosity fell remarkably from the neighborhood which trickled about 150g water, and phase inversion completed the prepolymer solution. heating the obtained distributed liquid at 30 degrees C, and carrying out reduced pressure removal of the excessive water at an organic-solvent row, after adding 150 moreg water -- a dryness solid-content ratio -- the water dispersing element of the polyester particle of 0.30 micrometers of mean particle diameters was obtained 30.0% Particle size was measured by laser-doppler formula particle-size-distribution meter micro truck UPA-150.

[0111] (Synthetic example of an example of reference 3; polyurethane particle) 33.5g of 533g and 2 of "bar knock DN-980 [the tradename of the poly isocyanate by Dainippon Ink & Chemicals, Inc.]", and 2-screw (hydroxymethyl) propionic acid, 0.05g of dibutyltin dilaurate, and 300g of ethyl acetate are added to the 4 mouth flask of 1L equipped with stirring equipment, reflux equipment, the dryness nitrogen introduction pipe, and the thermometer, and it agitates at 80 degrees C for 3 hours. The solution of a polyurethane prepolymer with which a dryness solid-content ratio becomes 6.80% of NCO content 50.0% was obtained. You made it react and NCO (isocyanate machine) content asked for the ethyl-acetate solution of the  $\text{JI n}$  butylamine of concentration known more superfluous than the isocyanate machine which carries out weighing capacity of the sample solution of the specified quantity, and measures it a constant rate, in addition by carrying out the back titration of the superfluous  $\text{JI n}$  butylamine in the hydrochloric-acid solution of concentration known.

[0112] 30g of a methyl ethyl ketone was added to 100g of solutions of the above-mentioned polyurethane prepolymer, and water was dropped, neutralizing and stirring by 3.50g of a triethylamine. It thickened gradually, viscosity fell remarkably from the neighborhood which trickled about 150g water, and phase inversion completed the prepolymer solution. It added slowly, stirring the solution which dissolved 2.51g of a diethylenetriamine in 50g water, after adding 150 moreg water. subsequently, the thing which the obtained distributed liquid is heated at 30 degrees C, and is done for the reduced pressure removal of the excessive water at an organic-solvent row -- a dryness solid-content ratio -- the water dispersing element of the urethane particle of 0.078 micrometers of mean particle diameters was obtained 33.5% Particle size was measured by laser-doppler formula particle-size-distribution meter micro truck UPA-150. The acid number of the urethane particle for which carried out weighing capacity of the sample solution of the specified quantity, and it titrated and asked with the methanol solution of the potassium hydroxide of concentration known was 31.2.



[0113] (Example 1) Carbon black CWA (product made from 55 % of the weight; Ciba-Geigy of carbon black; carbon black contents graft-ized by acrylic acid resin) 30.0g, 45.0g [ of distilled water ], and isopropyl alcohol 60.0g, and aqueous ammonia (as NH<sub>3</sub>) After carrying out stirring pulverization of 15.0g of the content for 10 minutes 28 to 30% of the weight with the homogenizer HG30 (Hitachi, Ltd. make) of cutter C20 wearing, it filtered through the 15-micrometer filter and the distributed liquid of carbon black CWA was obtained. This distributed liquid contained the solid content 21.0% of the weight.

[0114] Megger fuck F-177 (product made from Dainippon Ink chemistry) 0.02g was added in this turn as 30.0g [ of carbon black CWA distribution liquid ], 75.0g [ of distilled water ], and methanol 30.0g, and a fluorine system surfactant, stirring to 36.0g of water dispersing elements of the acrylic particle obtained in the example 1 of reference, and it stirred for 10 minutes at the room temperature further, and considered as application liquid.

[0115] The front face is grained using the water suspension of a nylon brush and PAMISUTON of 400 meshes for the aluminum plate of 0.3mm \*\* in thickness, and, subsequently they are the inside of 20% sulfuric-acid electrolytic solution, and current density 2 A/dm<sup>2</sup>. Anodizing is carried out and it is 2.7 g/m<sup>2</sup>. The oxide film was formed, rinsing dryness was carried out, and the base material was obtained.

[0116] The wire bar of rod number #20 was used for this base material, previous application liquid was applied to it, 60 degrees C dried for 4 minutes, and the lithography version original edition 1 of this invention was obtained. a dryness coverage -- 2.2 g/m<sup>2</sup> it was .

[0117] After the test exposure machine (wavelength of 808nm, amount of exposure energy 150 mJ/cm<sup>2</sup>; line electronic company make) which carried 1W infrared semiconductor laser performed picture exposure using the lithography version original edition 1, 30 degrees C was developed for 10 seconds in manual development using PS plate developer PD-1 (made in poly chromium Japan) 1:99 diluted solution for positives. Furthermore, after rinsing, gum liquid UG1 (made in poly chromium Japan) processing was performed, it dried, and the printing lithographic plate (1) was obtained. Each above work was done under the Ming room.

[0118] Moreover, rinsing and after carrying out counter etching liquid (made in universal-time1; poly chromium Japan) processing, the burning of the 240 degrees C (1) of the printing lithographic plates was carried out for 10 minutes in burning oven (SPBO-1 type; product made from the Mitsuaki chemistry), gum length was rinsed and carried out, and the printing lithographic plate (1') was produced.

[0119] next, a printing lithographic plate (1) -- and (1') it used and the printing examination was carried out printing conditions -- printing machine; "TOKO 820L" (the Tokyo aircraft instrument incorporated company make), 5000 print speeds/hour, the print sheet; Jujo diamond coat B4, and ink; Geos-G red-; [ S (Dainippon Ink & Chemicals make) and etching-solution ] "PP screen" (made in Nikken chemical research center) dampening water [ ;P ] P screen was used for 1:50, having diluted it to it with water. In the case of the printing lithographic plate (1), the good number of sets of a printing picture was 1,200 sheets, and, in the case of the printing lithographic plate (1'), they were 2,000 sheets.

[0120] (Example 2) After carrying out stirring pulverization of carbon black HCF30.0g for black colors, 45.0g [ of distilled water ], and isopropyl alcohol 60.0g, and the 45.0g of the tetraethylammonium highness DOROKI side 10% solution for 10 minutes with the homogenizer HG30 (Hitachi, Ltd. make) of cutter C20 wearing, it filtered with the 15-micrometer filter and the distributed liquid of carbon black was obtained. This distributed liquid contained the solid content 22.2% of the weight.

[0121] 35.0g of carbon black distribution liquid, 240.0g of distilled water, and 100.0g of methanol solutions which contained the megger fuck F-470 (Dainippon Ink & Chemicals, Inc. make) 0.8% of the weight as fluorine system surfactants were added in this turn, stirring to 40.0g of water dispersing elements of the polyester particle of the example 2 of reference, and it stirred for 10 minutes at the room temperature further, and considered as application liquid.

[0122] Application liquid was used for the base material produced in the example 1, and the wire bar of rod number #20 was applied to it, was dried for 4 minutes 60 degrees C, and the lithography version original edition 2 of this invention was obtained. a dryness coverage -- 2.0 g/m<sup>2</sup> it was .

[0123] After the test exposure machine which carried 1W infrared semiconductor laser like the example

1 performed picture exposure using the lithography version original edition 2, 30 degrees C was developed for 10 seconds in manual development using PS plate developer PD-1 (made in poly chromium Japan) 1:99 diluted solution for positives. Furthermore, after rinsing, gum liquid UG1 (made in poly chromium Japan) processing was performed, it dried, and the printing lithographic plate (2) was obtained. Each above work was done under the Ming room.

[0124] Moreover, rinsing and after carrying out counter etching liquid (made in universal-time1; poly chromium Japan) processing, the burning of the 240 degrees C (2) of the printing lithographic plates was carried out for 10 minutes in burning oven (SPBO-1 type; product made from the Mitsuaki chemistry), gum length was rinsed and carried out, and the printing lithographic plate (2') was produced.

[0125] next, a printing lithographic plate (2) -- and (2') it used and the printing test was carried out on the same printing conditions as an example 1 In the case of the printing lithographic plate (2), the good number of sets of a printing picture was 1,000 sheets, and, in the case of the printing lithographic plate (2'), was 1,600 sheets.

[0126] (Example 3) Stirring the solution which carried out forcible distribution of oil black 2HB (Tokyo Chemicals) 10.0g and the megger fuck F-470 (Dainippon Ink & Chemicals make) 1.0g beforehand at isopropanol 60g, after adding 110g of water, stirring to 32.0g of water dispersing elements of the polyurethane particle obtained in the example 3 of reference, in addition, it stirred for 10 minutes at the room temperature further, and considered as application liquid.

[0127] Application liquid was used for the base material produced in the example 1, and the wire bar of rod number #20 was applied to it, was dried for 4 minutes 60 degrees C, and the lithography version original edition 3 of this invention was obtained. a dryness coverage -- 2.1 g/m<sup>2</sup> it was .

[0128] After the test exposure machine which carried 1W infrared semiconductor laser like the example 1 performed picture exposure using the lithography version original edition 3, 30 degrees C was developed for 10 seconds in manual development using PS plate developer PD-1 (made in poly chromium Japan) 1:26 diluted solution for positives. Furthermore, after rinsing, gum liquid UG1 (made in poly chromium Japan) processing was performed, it dried, and the printing lithographic plate (3) was obtained. Each above work was done under the Ming room.

[0129] Moreover, rinsing and after carrying out counter etching liquid (made in universal-time1; poly chromium Japan) processing, the burning of the 240 degrees C of the printing lithographic plates 3 was carried out for 10 minutes in burning oven (SPBO-1 type; product made from the Mitsuaki chemistry), gum length was rinsed and carried out, and the printing lithographic plate (3') was produced.

[0130] next, a printing lithographic plate (3) -- and (3') it used and the printing test was carried out on the same printing conditions as an example 1 In the case of the printing lithographic plate (3), the good number of sets of a printing picture was 800 sheets, and, in the case of the printing lithographic plate (3'), was 1,200 sheets.

[0131]

[Effect of the Invention] The matter which absorbs light and generates heat, and the acid number by 10-300 and the sensible-heat nature constituent with which a mean particle diameter contains the anion type self-water-dispersion resin particle and fluorine system surfactant to 0.005-15 micrometers The negative-mold lithography version original edition by this invention painted on the base material with a hydrophilic front face is performing process processing of the picture Mr. exposure by the high-energy light based on the digital information from a computer, the development by alkali solution, after treatment, burning processing, etc. under the Ming room. The printing lithographic plate which can be printed was able to be obtained easily.

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[Translation done.]